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## **Kinetics of the wood pyrolysis process in the production of raw materials for medical purpose sorbent**

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### **Abstract**

The deterioration of the ecological situation poses important tasks before the solution of the problem of obtaining and searching for new sorbents, as well as the development of new sorption technologies. The urgency of the problem does not diminish even during the economic downturn; on the contrary, the role of carbon sorbents in solving environmental problems has increased many times over. The expansion of the fields of application of sorbents is restrained, in addition to economic problems, by the lack of a sufficiently wide range of them, both in terms of prices and quality. Investigation of the parameters of technological processes in the production of charcoal will make it possible to obtain the feedstock with the lowest energy consumption at a consistently high quality of the produced charcoal. As a result of the studies carried out, the dependences of the coefficient of thermochemical shrinkage in the longitudinal and transverse directions were revealed. In addition, the fields of temperature and the proportion of reacted wood inside the material were identified. Mathematical modeling made it possible to study in more detail the dynamics of the pyrolysis process. The investigated fields of temperature and the proportion of reacted wood show the calculated spatio-temporal distribution of the values of temperature and the proportion of reacted wood in the process of pyrolysis. The presented data show that over time, the front of the release of volatile components moves from the surface to the interior of the material. Analysis of the fields of temperature and the proportion of reacted wood made it possible to obtain the distributions of the proportion of reacted wood and temperature over the cross section of the sample during pyrolysis.

Studies have made it possible to determine the influence of certain factors such as pressure, temperature of the environment, size, density and humidity of the sample on the yield of final products, etc. the duration of the pyrolysis process. Also determine the

influence of pressure and temperature of the medium, size, density and humidity of the sample on the yield of final products on the duration of the pyrolysis process.

As a result of the experiments, data were obtained, on the basis of which it is possible to determine the optimal parameters of the pyrolysis process for its intensification, in order to reduce economic costs in the production of raw materials for sorbents for medical purposes.

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